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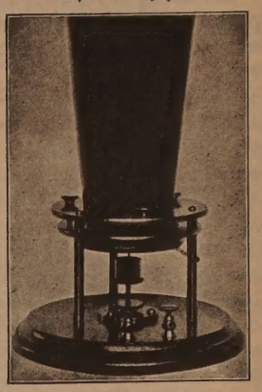
THE NEWSPAPER FOR
THE HOBBYIST OF VINTAGE
ELECTRONICS AND SOUND

# THE HORN SPEAKER

TELEPHONE CENTENNIAL
1876 - 1976



## Radio Threatening the Phonograph

### By H. GERNSBACK

*Radio News for June, 1922*

WE take the following editorial from a musical trade journal, *The Music Trades*, on the date of March 4th.

"The radio concerts that have suddenly become popular have set many people to thinking, prophets to predicting, and, as usual, pessimists to foreboding disaster.

"One night last week one of these pessimists was holding forth to a group of acquaintances in which he prognosticated the early eclipse of the phonograph because of the advent of the radio.

"'Who,' he demanded, 'will care to turn on a phonograph, which is limted to the records in the cabinet, when a whole world is beckoning? Why should anyone listen to a record of the "Sextette" from "Lucia," for example, even though Galli-Curci be included, when they can be rigged up with the Metropolitan Opera House and hear the entire opera? No, this is the end of the phonograph—the beginning of the end. With the receiving horn of the radio in his library a man is *en rapport* with the cosmos. When he can hear the living voice, why should he turn to a dead record?'

"Thus the prophet of pessimism.

"We believe most earnestly that the musical industries must take into account this astonishing new device. The fact that Mr. Kreisler, for example, is no longer limited to the sitting capacity of an auditorium, but is enabled by this new miracle of science to transmit the thrilling tones of his instrument to a vast unnumbered audience, not alone in this country but even across the heaving seas, must be reckoned with as a new thing in music which will inevitably play its part in the future.

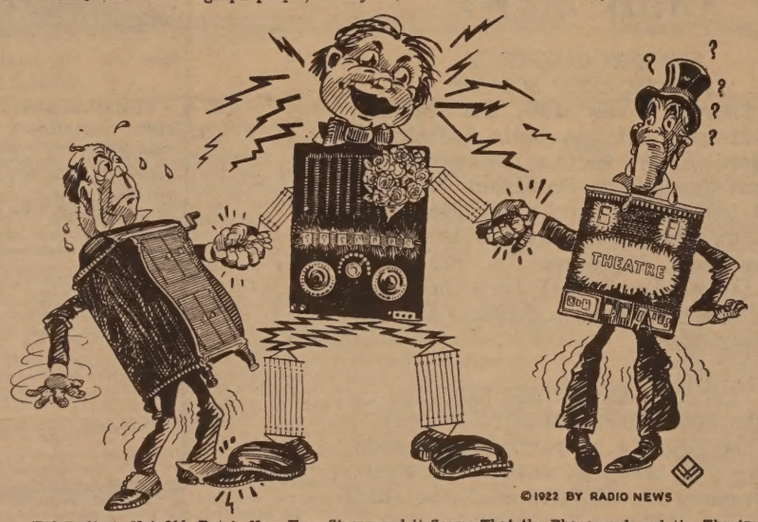
"That it will never displace, or even interfere with the phonograph, we do not consider even remotely probable, although one hears the expression frequently nowadays, and presently, in the radio magazines which are springing up, we may find it reiterated by its enthusiasts.

"The peculiar virtue of the sound reproducing instrument is that it fixes permanently, ready for instant use, something that we love. On the radio, though we may hear Kreisler playing the "Devil's Trill" Sonata of Tartini or the Wieniawski Concerto, we are subject to the caprice of the artist's choice of program. But on the phonograph we have the selection of the pieces we desire. If we wish Kreisler to play his "Caprice Viennois" we need but place the record on the turntable and his bow is at our bidding. If we want an encore he has no power to refuse. If we want his "Old Refrain," or the "Grieg Nocturne," or whatever he plays that we want, we need only to take the record from our cabinet and our wish is gratified.

"No radio can supplant such a satisfactory, obliging and complaisant companion. Whatever the development of the radio may be in the home life of the nation—and certainly its possibilities seem to be Aladdin-like—we may be sure that the place of the phonograph is secure.—C. F. O."

This quasi apology, indeed, makes interesting reading and simply goes to show what Radio is doing to the phonograph. It is known notoriously throughout the phonograph trade that Radio has been making great inroads upon the phonograph business, and while we do not mean to maintain that Radio will drive the phonograph out of the field, still when you ask people why they are not using phonographs or buying phonographs, the reply invariably is that they are using the Radio at the present time.

Of course, radio is a new thing, and just now on the ascending scale. Its novelty has as yet not worn off, but even the phonograph people, if they are honest with themselves, will not deny that radio is their great competitor. It costs money to buy phonograph records once you have the machine. It costs nothing to have all the music in the world which you desire, once you have a radio outfit. But there is no reason in the world why the two should not get along harmoniously even as conditions are now.




©1922 BY RADIO NEWS

Kid Radio is Not Old, But is Now Very Strong and it Seems That the Phonograph and the Theatre Are Somewhat Afraid of Him. Are Their Fears Justified?

You will no doubt find, during the next two years, that every phonograph store will be selling radio appliances. In many cities throughout the east they are already doing this, having been driven to it by lack of business. The leading phonograph trade journal now has a radio section. The logical upshot of it all will be met when the phonograph interests instead of opposing radio open their arms and welcome it. One of the largest phonograph manufacturers already has seen the light after having seen the "handwriting upon the wall." *Beginning this fall, he will equip all his phonographs with radio.*

A representative from another large phonograph company came in to see the writer the latter part of March and wanted to know where he could buy 10,000 small crystal sets that were, as he put it, "absolutely fool-proof" and which outfits were to be placed in the company's phonographs. He wanted delivery in two weeks!!

This is precisely what we are coming to. The machines of the future will serve the double purpose of record-music and radio. This will give the public a new incentive to buy phonographs, which incentive seems to be lacking at the present time. The more the two can be cemented together, the better it will be not only for radio,—which does not need any assistance today—but certainly for the phonograph.

#### RADIO AND THE THEATRE

It is not only the phonograph business that is having nerves every time the word radio is mentioned, but the theatrical business is running the phonograph a close second, foolish as it seems.

From a recent issue of the *Billboard*, we have plucked the following choice morsels which we give to our readers for what they are worth.

#### WANT PAY FOR RADIO CONCERTS

**Actors' Equity Association Adopts Resolution Advising Members to Seek Compensation**

Following the publication in *The Billboard* two weeks ago of a warning to the effect that the free concerts sent broadcast by the radiophone companies were injuring show business, the Actors' Equity Association last week went on record as opposed to its members giving ethereal performances without proper compensation. A resolution to this effect, adopted by the council of the Actors' Equity, read:

RESOLVED: That the attention of our members be drawn to the fact that the radiophone is a profitable commercial enterprise, which also in a way enters into competition with the theatre, and that, therefore our members be advised to seek proper compensation for any services they may be invited to give to the radiophone companies.

In explaining the Equity stand in regard to what they term the "radiograft", Mr. Paul Dullzell, assistant executive secretary, says:

"The General Electric Company and the Westinghouse people have been getting in on a lot of good stuff for nothing. Also the general electrical appliance houses. The radio concerts are a money making scheme and the artists who make them possible should be compensated.

"Heretofore the understanding has been that the advertising afforded the actor and the singer is of great advantage to them. For instance, they are told impressively that an audience of 400,000 has its ears clamped to the receiving apparatus all over the land and sea.

"I can see where the vaudeville managers already have just complaint. If this thing grows—and it bids fair to assume enormous proportions—there will soon be no incentive to go to the theatres. When audiences can hear everything in their own homes they won't have to go out to be entertained. What they will miss in stage settings and the personality of the actor will be made up by the novelty of the radiophone itself.

"We considered this a matter of such importance that at the meeting of the council last week it was resolved to suggest to our members that they seek compensation for ethereal performances."

E. F. Albee, head of the Keith Circuit, in an interview with a daily paper this week was quoted as saying that appearances for the radiophone by Keith artists was a violation of contract.

#### THE RADIOGRAFT

The Radiograf is a wonderful invention and is enjoyed by hundreds of thousands of people. A good many prominent actors and actresses have been invited to speak into it and have done so without charge. But now we learn that it is entering into competition with the theatre, since citizens prefer to sit at home and be entertained for nothing rather than go out into the night and spend their good money for theatre tickets. In order to draw the attention of our members to this matter the Council has passed the following:

"Resolved, that the attention of our members be drawn to the fact that the Radiograph is a profitable commercial enterprise which also in a way enters into competition with the theatre and that therefore our members be advised to seek proper compensation for any services they may be invited to give to the Radiograph Company."

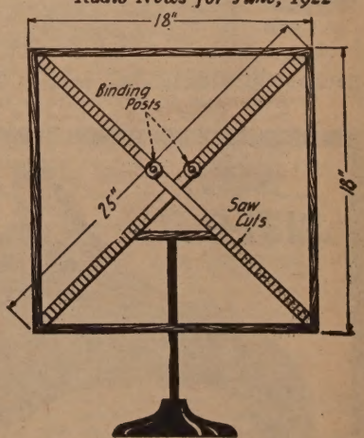
The Radiograph Co."—FRANK GILLMORE, Executive Secy.

*(By the way—what is a Radiograph?—Editor.)*

Of course, anyone who thinks about the matter calmly must appreciate the fact that if anything, radio certainly gives the theatre, the actors, and the singers, the best possible advertising that they could ever think of having. Think of an audience of 300,000 people listening to a singer! What better advertising could there be. And some of these 300,000 people when they get to town, as they invariably do, will wish to see or hear that singer in person. The radio audience is not always a radio audience; it frequently becomes a theatre audience as well. To think that a radio man is shut in all year around is ludicrous.

Even the most ardent radio fan after listening in for five or six days in the week will wish to go to a show on the seventh day. One of these days the theatrical interests will wake up to the fact that in radio they have the greatest possible and the very cheapest advertising medium they ever dreamt of in their wildest dreams. We predict that within a year the waiting list of our broadcasting stations will be so great that it will take months for our great singers and actors to be accommodated.

*Radio News for June, 1922*




Good Results Will be Obtained at Short Distances With This Loop, Using One or More Tubes.

### HOW TO MAKE A LOOP ANTENNA.

Many amateurs living in apartment houses are handicapped in their erection of an an-

(Continued on page 6)

# LETTERS

EDITOR'S MAILBAG

Dear Jim:

Renew my subscription to The Horn Speaker for another year. I have collected a few more radios since I wrote you last year. They are listed as follows: Ware type-W - Garrod RAF-Parmax - Miraco Super-6, Tuska-305 and 228 - Murad MA 13 with loop and Western Electric 7A amplifier also have collected all Riders Manuals also the Radiotron Manual except Vol. 23. Not bad as I only started collecting radios as of Oct. 1973. That's all for now. Keep up your good work in your paper. Always glad to see The Horn Speaker come to my mail box.

Thank you,
Julius H. Pilger
K2KCB
123-09 18th Ave.
College Point NY 11356

## TURN BACK THE DIAL

April 23, 1938
by Fred L. Davis

Favorite Children's Programs as reported by a RADIO GUIDE survey.

1. Singing Lady (Irene Wicker)
2. Coast To Coast On A Bus
3. Mickey Mouse Theater of the Air
4. Kaltenmyere's Kindergarten
5. Let's Pretend
6. Little Orphan Annie
7. The Lone Ranger
8. Don Winslow of the Navy
9. Jack Armstrong
10. Our Barn
11. Malcolm Claire
12. Dick Tracy
13. Dear Teacher
14. Purv Pullen
15. Tom Mix

Notes on the above: Singing Lady was voted #1 for the third straight year. The #2 show "Coast To Coast on a Bus" had been #5 in 1936 and #4 in 1937. The Mickey Mouse Theater was a new show.

Several weeks ago, Colonel Stoopnagle and Budd decided to split up after being together for a number of years. They say that the reason for their parting is they were having a tough time getting a sponsor and felt they could each do better alone. The Colonel is now heard on a new show over WOR and the Yankee Network in the East every Sunday evening, and Budd is heard over the Mutual network on Friday evenings in a program called "What's My Name?"

List No. 486

LEYDEN JARS

The Leyden Jar will intensify the spark of the transmitting coil.

Our Leyden Jars are of the very best quality in every respect. The glass is especially made for this purpose, and allows very little brush discharge. The covers of the jars are of polished oak, and the brass ball and rod are gold lacquered.

| List No. | | | Price |
|---|---|---|---|
| 486 | ½ | Pint Leyden Jar | $2.50 |
| 487 | 1 | Pint Leyden Jar | 3.00 |
| 488 | 1 | Quart Leyden Jar | 3.50 |
| 489 | 2 | Quart Leyden Jar | 4.00 |

Manhattan Electrical Supply Co., 1919

# Club News

SOUTHERN CALIFORNIA ANTIQUE RADIO SOCIETY

There's a new club, the Southern California Antique Radio Society. Had a great first meeting September 4. Grant Manning is President Pro Tem, and interested people can get information from Alan Smith, 6712 Bisby Lake Ave., San Diego CA 92119.

Looks like a real live bunch!

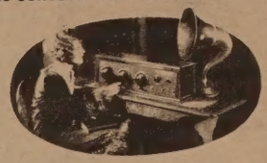
Thanks to Morgan McMahon for this information.

THE BUCKEYE ANTIQUE RADIO AND PHONOGRAPH COLLECTORS' CLUB

The club is preparing to discuss plans for their upcoming Mall show (November 19, 20, 21) at Chapel Hill Mall. An address for the Club is: Ken & Barb Spriggels, 293 Sundale Rd., Akron, Ohio 44313.


**Old Radio Treasures**

There's a rare old radio waiting for you somewhere. Here's how to have year-round fun discovering valuable old sets in your attic, local swap meet or antique barn. You'll enjoy McMahon's fascinating books, truly fine collector's references.



VINTAGE RADIO, 1887-1929: Pictorial story of pioneer days, 1,000 photos, 263 pages. $10.95 hard-cover, $8.95 soft.

A FLICK OF THE SWITCH, 1930-50: Fun picture reference of home, military, Ham, professional radio-TV-electronics, 312 pages. $10.95 hard-cover, $8.95 soft.

RADIO ENCYCLOPEDIA, Gernsback's 1927 classic beautifully recreated, 175 pages. $14.95 hard-cover, $10.95 soft.

RADIO COLLECTOR'S GUIDE, 1921-32: Data book with 50,000 facts on 9,000 models by 1,100 makers, 264 pages, $6.95.

1926-38 RADIO DIAGRAMS: Beitman's classic of 600 models, 240 pages, $7.00.

Here are the ideal holiday gifts.
ORDER NOW
FOR IMMEDIATE DELIVERY!

CIRCUIT DIAGRAM for any pre-1951 radio: $3.50. Send model number.

SEND TODAY to Vintage Radio, Dep't D, Box 2045, Palos Verdes, Ca. 90274. We pay postage. Calif. residents add 6%.

_____ $_____
_____ $_____
_____ $_____
_____ $_____
TOTAL $_____

Name _____
Street _____
City _____ St. ____ Zip _____
FREE! Age Guide with each order. FREE!

**Year-round Fun!**



1976 ad

NEW! JUST OUT!!

ANTIQUE RADIO CATALOG - 8 PAGES

65¢ or five 13¢ STAMPS

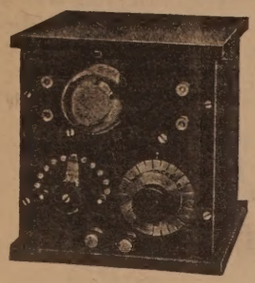
EVERYTHING FOR ANTIQUE RADIO RESTORATION
TUBES - SCHEMATIC DIAGRAMS - RADIO BOOKLETS

CAPACITORS - RESISTORS - INTERSTAGE & POWER TRANSFORMERS, SPEAKERS, CHOKES, DIAL LAMPS, RF COILS, I.F. TRANSFORMERS, SWITCHES, VOLUME CONTROLS, DRIVE BELTS, TUBE SOCKETS & ADAPTORS, HOOK-UP WIRE, DIAL LAMPS, BATTERIES, METERS, ETC.

PUETT ELECTRONICS
P.O. BOX 28572 DALLAS TEXAS 75228
PUBLISHERS OF
THE CLASSIC RADIO NEWSLETTER

1922 ad

# Tune Up With Us! Save Money!



## "Miraco"
## Radio Receiver

You are missing two opportunities if you are contemplating installing a Radio Receiving Set and pass this extraordinary offer by. You are missing the opportunity to save money; you are missing the opportunity of enjoying beautiful Radiophone Concerts, speeches, etc., or the thrill of catching signals out of the air.

**Price Prepaid**

**$20.00**

"Miraco" Vacuum Tube Radio Receivers are made to be sensitive to every detail flashed through the air, durable and handsome and yet at the low price of only $20.00 prepaid. which includes 22½ volt "B" Battery, 150 ft. aerial wire and insulators. The only additional equipment necessary for successful operation are phones, vacuum tube and a 6-volt storage battery or dry cells.

If your dealer hasn't the "Miraco" in stock order one direct today from this ad or write for literature describing this apparatus. Dealers write for Proposition.

**MIDWEST RADIO COMPANY,** Dept. A, 3423 DURY AVE. CINCINNATI, OHIO

*"EVERYTHING FOR THE RADIO MAN"*

1922 ad

# Another TELMACO Achievement

## The TELMACOPHONE

### Here is the Height of Telmaco Perfection

**Equipped with Baldwin Type C Unit, inverted horn, reflected tone. Equal to any other horn twice its length. Designed and perfected by expert acousticians. Complete in every detail.**

Don't be misled into buying a loud speaker offered for less, and expect satisfaction; for a loud speaker of quality cannot be sold for less. Only after the most exhaustive tests and comparisons with the other loud speakers; and only after the most thorough research, laboratory tests, and field demonstrations has the Telmacophone been perfected, and offered now, for the first time, to the public.

Telmaco Amplifiers, Receivers, Detectors, Variometers and Variocouplers have earned a national reputation for quality, endurance and satisfaction not excelled by any other line. You can expect equal satisfaction from the Telmacophone.

**We advise the purchase of the Telmacophone without unit for those who have Baldwin Unit of their own.**

**No Extras to Buy.**

**Nothing to get out of order.**

**Fully Guaranteed**

**Price without Badwin Unit, but with cap attached, $14.50**

Dealers! We are distributors for nearly all standard lines. Full discounts on the Telmacophone. Write for proposition on our complete line.

RADIO DIVISION

**Telephone Maintenance Co.**

*Note New Address*

**20 So. Wells St. Dept. B. Chicago, Ill.**

# For those who want to learn...

ATTENTION ANTIQUE RADIO COLLECTORS, EXPERIMENTERS, HERE IS OUR NEW HISTORICAL PACKAGE OF REPRINT LITERATURE!!!!!!!!! VERY RARE BOOKS, MANUALS, AND CATALOGS!!!!!!

**FINGERTIP SERVICE**

Solve all your old time radio problems...save on the long distance phone calls, inquiries, letters, and both of our valuable time. These rare books will enable anyone to repair, restore, find out about that unknown 1920-25 Kit radio, build from construction plans (like the old days) crystal sets, the First Marconi wireless sets and stations, one through 10 tube sets, any type of circuits, up to and including early mechanical television Sets...use the same procedure a radio design engineer or technican uses: Most large old radio Catalogs list the radio model number and exact part numbers, technical specifications of that unknown or bad transformer...use this data to secure a modern replacement, plus it is very educational..IF YOU PLAN TO DISPLAY your equipment, the judges will give you more POINTS with supporting LITERATURE!!!!!!!!!

1. 1917 Practical Wireless Telegraphy Rev. Ed., By Elmer Bucher (10,000 printed) A complete text for students of radio comm., when radio was born, rare theory based on all MARCONI'S works, 350 illustrations, 17 chapters, 350 pages, appendix contains Questions and Answers to all..FIRST BOOK WIRELESS.....$19.95.
2. 1920 The Wireless Experimenter's Manual By Elmer Bucher Brother book to above RARE design and construction (how to build) ALL MARCONI'S equipment from each component to his complete station, a step-by-step analysis to show Radio Amateurs Radio Communication (started here) 358 pages, 14 chapters, over 244 illustrations, RARE Marconi wiring diagrams, other early manufacture's such as De Forest, Grebe, Weagant, Poulsen, (try and buy the originals) all in museums...most comprehensive manual printed..all details.....$19.95.
3. 1924 POPULAR RADIO HANDBOOK NO. 1, By Banning and Cockaday, All details How to construct and build crystal sets, one thru five tubers..all circuits, Book was the result of all their radio projects published in Popular Radio Magazine/newspapers, excellent for unknown kit radios, 100 pages.....$6.95.
4. 1923-1924 Electrical Research Laboratories Bulletins No. 17 and 18 ERLA Duo-Reflex circuits//Scientific Audio Amplification, all design and construction plan of How to build these early radio stages, 20 pages.....$2.95.
5. 1924-25 Modern Radio Reception, By Charles R. Leutz A step by step detail analysis of all his works, How to build Regenerative, Super-Hets, Pliodyne, Laboratory, transmitting data and equipment: He used parts from 17 major sources and made the first Classic Hits, Super Hets, Models C7, C, Palmar, Super L, C-10, S, J, Type T22, Cunningham tubes all types, Rare Diagrams of Western Electric Equipment, Gen Electric and Radio, over 260 of the finest well illustrated diagrams test equipment, Complete Chapter on His law suit RCA, 345 pages..$19.95
6. 1924 Radio Reading Course with 5 Lecture Books, By Prof. J.H. Morecroft, We combined five books into one that covers Theory, Design, Construction, Operation, Maintenance,most authoritative on Radio Telephony, for gen. public to clear up misconceptions of radio experts during wartime and after, 188p...$9.95
7. 1927 RADIO KEY BOOK, By E.H. Rauland How to build models: All-American, All-Amer Jr., Sr., Browning Drake 4-T, Roberts-5-tube, Toreid, Luxury, Raulands, and 25 other radios, well illustrated, all details..ONE OF THE BEST REF. WE USE,50p $2.25
8. 1932 Radio Trading Co. Catalog No. 25, Radio bargins for all, covers all phases well illustrated, very educational,loaded with the Earliest TV'S/all accessories, many midget receivers, tubes, all parts/model no. etc., you will love it,100p $7.95
9. 1932-33 EMRO RADIO Catalog, 100 8½ x 11 well illustrated, Radios: EMRO catherdals, Washington Batt.-types, Crosley Johnny Smoker, Air King, Supreme, Jewell, Monarch, Envoyette, Grebe MU-1, Globe,National, RCA,Superior, best selected types,100p $7.95
10. 1933 RADIO/TV SUPPLY CO. WHOLESALE GUIDE CATALOG, 225 pages 8½ x 11 selected and used by us, contains valuable descriptive data/tech. information for Radio dealers, Service men, Engineers and Amateurs..so well illustrated some parts are almost full page, contain model no., which use every part/subs THE BEST.....$14.95
11. 1924-25 RCA Radiola Sales Catalog Booklet, Models: all sets and accessories Made in these years; III, III-A, VIII, Super-Het, 25,26,28,30,20, Spkrs, 22p.....$2.95
12. 1927-28 RCA Sales Booklet, By Strawn Merch. Co. Texas, RCA'S: 16, 18, 30-A, 32, 50, 52, 64, all later accesss, Spkrs: 100-A,103,106, tubes, 28 pages.....$2.95

# for those who want to remember...

13. 1929 RCA Radiola Model 66 Super-Heterodyne Instruction and Operations Manual Complete with wiring diagrams 16 pages, well illustrated.....$2.95
14. 1930 BURLEY Radio Instruction Book By Spiegel-May-Stern Co., For Screen Grid Models: ZF9853,55,57,54,56, and 9858 RARE 18 page with illustrations.....$2.95.
15. RADIO TUBE TECHNICAL MANUAL, 80 pages we compiled by us as an result of alot of questions and answers, Contents: Theory of Radio Tubes, Radio tube tables featuring Receiving tube data from RCA and National Union (first tube spec sheets illustrating the earliest RARE tubes) kinescopes included, all diagrams, characteristics, Specification sheets and own hints on WD11, 99, 120, 201A,etc.$4.95
16. OFFICIAL RADIO SERVICE MANUAL INDEX FOR 1931-32-33, 10 pages.....$1.95
17. J. F. RIDER'S MASTER INDEX FOR RADIO VOLUMES 1, 2, 3, 4, 42p write for others.$2.95
18. J. F. RIDER'S MASTER INDEX FOR TV VOLUMES 1 thru 4, 50pages write for others.$2.95
19. SUPREME PUBLICATIONS MASTER INDEX FOR ALL RADIOS/TV 1926-1952 34 pages.....$2.95
20. 1947 ARVIN RADIO DIAGRAMS-Supreme Publications, 34 pages, 38 models.....$2.95
21. 1947-48 PHILCO TELEVISION YEARBOOK, Years of the first production TV'S, contains Complete Service Information for all sets made...Projection Model 48-2500, schematics, diagrams, photos, well illustrated over 145 pages.....$7.95
22. 1924 VICTROLA BOOKLETS How to get the most out of your Victrola...36pages 1924 VICTROLA SPRING MOTOR TYPE Instructions, OperationsBook ...8pages BOTH BKS $4.95
23. 1921 RCA thru 1927 VICTOR RECORD AND MAGAZINE LISTING We have over 20 Major (620pages) booklets, magazines, catalogs, first issued, a must for the Record and Radio Collectors, lists the very RARE RADIO-RECORD Combinations Consoles such as Automatic Electrola NO. 1070, prices included, Too numerous to mention Send $1.00
24. E. H. SCOTT CLASSIC RADIO FACTORY SERVICE MANUALS/LITERATURE LISTING: Reprints of literature 1922-1950, Rare items lots of pages.....Refundable F/O..$1.00
25. 1949 EMERSON RADIO/TELEVISION ORIGINAL FACTORY SERVICE MANUAL This consist of 50 different individual FSM combined into one 264 page manual, 121 models.$14.95
26. ORIGINAL TUBE SPECIFICATION SHEETS (wrapped around tubes in carton)For WD11, VT-5 W.E. 215A, De Forest VT Audion, Original Tubular Audion Vacuum Amplifier, C-299, UX-120, Radiotron UX-201A, Cunningham CX-371-A/301-A, RCA UX-250 each have their own circuits, we have left room for you to cut out label FOR USE IN LAST AUDIO STAGE ONLY, use on 7½ and 112A/120 all 8½ x 11 7 pages.....a set..$1.50
27. NEED AN APPRAISAL? Any Radio, or early Scientific Device 1850-1950 $3.00 each. ANY Piece of Literature $0.50 each. Each appraisal comes on our standard Form dated and signed, any and all sentimental value discarded, 100's have been done for collectors, antique shops etc., RULES: Send a good Photograph, Model No. if known, Manufacturer, tubes, knobs, dials, Style, condition, if all UNKNOWN, a rough sketch of all, 26¢ in stamps, all Photos returned, monies returned if we can not appraise. Send $1.50 for ANY ITEM RESEARCHED, $1.50 Any Schematics (5 pages) per set 1890-1950 Radios or any electrical device, ANY INQUIRY 26¢ in STAMPS PLEASE!
28. OUR LATEST RADIO/WIRELESS RARE TUBE/REPRINT CATALOG $1.00 (refundable first order)
29. 1920-33 8½x11 CHART, in living COLOR, of 54 Carbon Resistors 50 ohms to 10 megohms, solve all your mystery resistor problems, suitable for framing....$2.25 each.
30. 1924-1930 ORIGINAL ATWATER KENT FACTORY SERVICE MANUAL ENCYCLOPEDIA, revised and reprinted, 225 pages, 300 illustrations which covers everything you need to know about all models, speakers, accessories, 3 volumes,BEST SOURCE EVER $15.00.
31. NEW 1976 RADIO ANTIQUER'S DIRECTORY AND COLLECTOR'S GUIDE SERVICES QTR, covers all phases from A to Z, over 75 pages, the MOST IMPORTANT BOOK YOU CAN GET IN OUR HOBBY, STANDARD COPY $5.00, all photo in living COLOR (where applicable) $9.95.
32. LATEST FLEA MARKET QUARTERLY DIRECTORY covers all markets in alphabetical order throughout U.S.A. and CANADA, getting bigger than ever, others who bought know $2.25.

NOTE: UNLESS OTHERWISE SPECIFIED ALL BOOKS SHIPPED BOOK RATE: For First class ADD $3.00 per book, Special Handling To 2lbs 50¢, 2-10 lbs., 70¢, Over 10 lbs $1.00 each, some weigh 3 lbs., If in doubt leave check blank, we will fill-in, refund excess. Calif. Res. 6% ST. CANADIANS: same as USA, NO insurance on AIR, PAYABLE IN US FUNDS, NO STAMPS, ADD $2.50 for your check exchange rate, SAME FOR OTHER COUNTRIES. U. S. POSTAL SERVICE now requires a week for F-C MAIL, BK RATE 3 to 4 weeks, WE require 10 days to Process and Deliver. Insurance extra, Min. 40¢ 80¢ to $100, ORDERS OVER $30 FREE BONUS, Money Back Guarantee! ORDER ALL: HISTORICAL RADIO SERVICES, BOX 15370, DEPT. HS10 Long Beach, Ca. 90815 USA.

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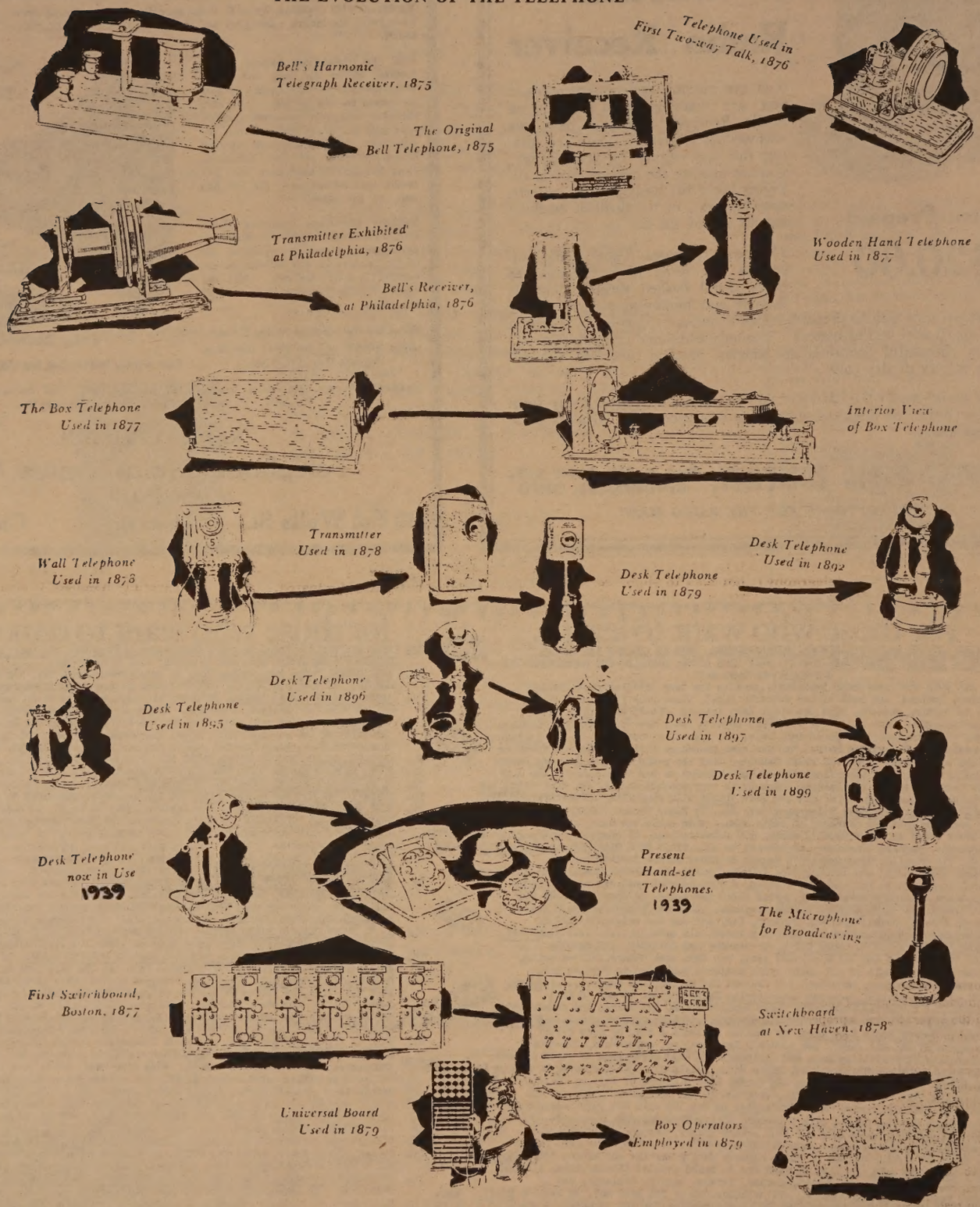
REPAIR CIRCUITS services

You can't beat our System.

Literature SAVE ENERGY HRS SHOP BY MAIL

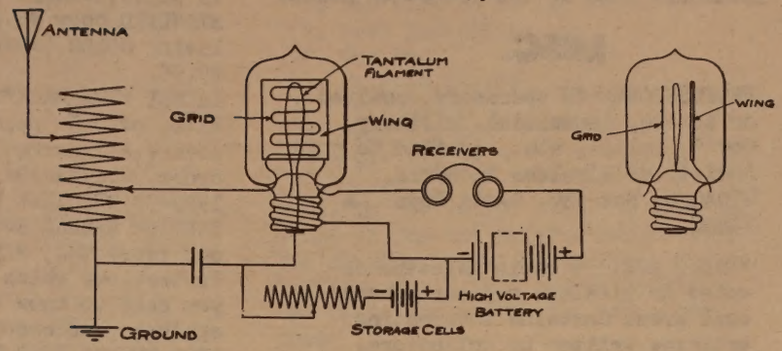
We aim to please

## THE EVOLUTION OF THE TELEPHONE


Bell's Harmonic Telegraph Receiver, 1875
The Original Bell Telephone, 1875
Telephone Used in First Two-way Talk, 1876
Transmitter Exhibited at Philadelphia, 1876
Bell's Receiver, at Philadelphia, 1876
Wooden Hand Telephone Used in 1877
The Box Telephone Used in 1877
Interior View of Box Telephone
Wall Telephone Used in 1878
Transmitter Used in 1878
Desk Telephone Used in 1879
Desk Telephone Used in 1892
Desk Telephone Used in 1895
Desk Telephone Used in 1896
Desk Telephone Used in 1897
Desk Telephone Used in 1899
Desk Telephone now in Use 1939
Present Hand-set Telephones 1939
The Microphone for Broadcasting
First Switchboard, Boston, 1877
Switchboard at New Haven, 1878
Universal Board Used in 1879
Boy Operators Employed in 1879

# The Audion; A Third Form of the Gas Detector

By John L. Hogan, Jr.




M.E.

Two methods by which a sensitive column of conducting gas may be used as an oscillation responder have been considered in the Flame and in the direct current Arc*.

It has been found that the gas column is a most delicate medium upon which to build the trigger action of a responsive device. But it has also been found that the conducting gas flame and the arc are unsteady—that their very sensitiveness operates against their practical efficiency because they respond emphatically not only to Hertzian waves, but to *air currents*. This of course makes them useless for commercial wireless.

The extreme delicacy of the gas detector of course renders it sensitive not only to complete starts and stoppages of received electric waves (as in wireless telegraphy), but also to slight *variations* in them. Therefore the apparatus may be believed highly suitable for aerophony, if it could be caused to respond to Hertz waves only, and kept from hissing and rattling in the telephones at every gust of wind.

It was found, over twenty-five years ago in Germay, that if a metallic plate and a filament were sealed side by side in an evacuated globe, a current could be passed from the filament to the plate while the filament was lighted, but not otherwise. After a long series of tests it was discovered that the hot filament emitted a flow of ions which carried the current from filament to plate. This flow is exactly analogous to that in the gas flame and in the arc, but for a long time it was not considered that it could be used as a nearly ideal wave detector.

After several notable steps of development by different workers, the device now known as the Audion was produced. This has been modified and so changed in the course of its growth that there are now some six or more distinct varieties. In all these the operating principle is the shattering of a column of conducting gas by a received electrical impulse. But, unlike the flame and arc detectors, the gas column is protected from air currents by the globe of the Audion-lamp, so it is evident that the great difficulty mentioned above has been eliminated.

The most sensitive type so far designed is called the Grid Audion. This is usually a six-volt low candle-power incandescent lamp with a tantalum filament, having a small platinum plate (about 10x15 millimeters) fastened approximately three millimeters from the filament, and a "grid" bent from rather large (say number twenty-two) platinum wire placed nearly midway between the two. The filament is lighted by three small storage cells, whose output is varied by a rheostat having continuous smooth adjustment. From the positive terminal of this storage battery a wire is led to the adjustable high voltage battery of the telephone circuit, as shown in the diagram. The two leads from the tuning apparatus are respectively connected to the grid and to the negative side of the storage cells.

It has been definitely stated that the Audion is a potential operated device. But on the same authority it is said that the Audion is dependent for its response upon the total energy received, so the class to which the apparatus really belongs is somewhat hazy.

It is undoubtedly true that the Audion, when in its best condition, is highly sensitive and that it is therefore well suited to aerophony. But unfortunately the sensitive condition is extremely difficult to find and still more difficult to maintain. Some Audion-tubes show an extraordinary sensitiveness at first, but quickly grow dull when in use. Other lamps are nearly worthless from the beginning, and none remain sensitive very long.

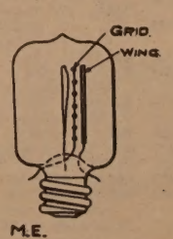
The Audion is capable of being developed into a really efficient detector, but in its present forms is quite unreliable and entirely too complex to be properly handled by the usual wireless operator. The principles involved are of the utmost importance, but their application is crude and irregular.

The Audion offers another fascinating field for investigation and improvement, and it is to be hoped that it will be taken up and the work so well begun carried to a satisfactory conclusion. For aerophony a detector is needed which will reproduce with fidelity the higher harmonics of the voice. The Audion, when carefully handled, is such a detector, but the best adjustment is so very critical that the manufacturers of aerophonic apparatus have found that almost no demand for the tubes exists, and are therefore supplying crystalline thermo-electric detectors with their outfits. This fact, together with the unsatisfactory resuls of tests made by the Government and by one of the foremost wireless companies in America, would seem to indicate that as yet the device is not to be absolutely depended upon and is therefore not to be used in the serious undertakings of aerophonic communication.

**Modern Electrics, October 1908**

## AUDION.

We hasten to correct two mistakes made in Mr. J. L. Hogan's article of the "audion" in the October issue. Our artist when showing a side view of the instrument made a slight mistake. The grid should be placed *between* the filament and wing as per our illustration herewith.




M.E.

The last words of Mr. Hogan's article should read thus: "In the serious undertakings of radio-communication."

**Modern Electrics, November 1908**

## TELEPHONE

readily removing it from the mouth when not in use. A cloth band passes around the back of the head to hold the apparatus in its proper position. The compound magnet is covered with silk or other suitable material. This covering conceals the primary and secondary wires and protects them from injury.

The transmitter consists of a non-conducting mouthpiece, and a chambered hemispherical block containing two semicircular plates of carbon insulated from each other, and connected by a wire with the two metal pieces forming the yoke which supports the mouthpiece. A plane disk of carbon rests upon the two semicircular carbon plates and is free to vibrate upon them.

The primary current passes through the yoke and through the carbon disk and the two semicircular carbon plates. The variations of contact produced between the three carbon surfaces by the action of sound waves on the carbon disk disturb the primary current, inducing undulatory currents in the secondary wire of the induction coil.

The primary and secondary circuits differ little from the common practice. Mr. McDermott has dispensed with a special call bell magnet, using the magnet of the induction coil for the purpose of operating the bell hammer armature. This arrangement of telephone transmitter and receiver possesses many obvious advantages; for example, it would be very convenient in cases of writing by dictation, or of stenographers recording speeches. Persons may remain at home listening to public addresses, sermons, or concerts, sitting comfortably and listening without the slightest inconvenience.

This invention enables two persons to carry on a conversation as readily as if they were in each other's presence. As the entire apparatus weighs but a few ounces, its weight is not at all noticeable. It is unnecessary to point out the further advantages possessed by this novel arrangement, as they will be apparent to those understanding the requirements of telephonic communication.

**Scientific American, November 27, 1880**

### LOOP ANTENNA

tenna by lack of space. I have constructed a loop aerial as shown in the diagram and obtain very good results with one vacuum tube detector.

To construct this loop, two laths of wood 25½ inches long should be obtained. A notch is cut in the center of each and they are joined together to form an "X." Four laths of wood each one-eighth inch long are nailed across the extremities of the cross supports to form a square. Commencing 3½ inches from the center, saw-cuts ½ inch apart are made on both edges of the cross support beginning at the first or inner saw-cut. No. 22 D.C.C. wire is wound tightly in a clock-wise direction to the outer edge. The loop is then turned over and the wiring continued in an anti-clock-wise direction back to the first saw-cut on the opposite side. Two binding posts are fastened to the cross supports to which the ends of the wire are connected. A strip of wood is fastened across the two opposite legs of the cross supports. A hole is bored of corresponding size in the center of the bottom protecting piece and a dowel is inserted to permit the loop to revolve.

Contributed by CECIL GUYATT.
Brooklyn, N. Y.

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# THE HORN SPEAKER

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*Fig. 2.*

*Fig. 1*

McDERMOTT'S TELEPHONE.

TELEPHONE.

The engraving shows an improved form of telephone receiver and transmitter, and a very convenient combination of the two inst... P. McD... T... head... phon... with... This... ...ng tranceous... ...d of preventing bystanders fr...

what is said in the transmitter. The receiver magnet consists of thin strips of magnetized steel having a U-form and adapted to the head. The ends of the magnet are curved to receive the support for the diaphragms, mouthpieces, and bobbins. The iron cores of the bobbins are inserted in the curved portion of the magnet.

The transmitter is attached to the receivers by a swinging elastic yoke, which renders it adjustable to the mouth of any user and admits of

(*Continued on page* 5)